REMARKS

In the Office Action dated April 3, 2006, claims 1, 2, 9-12 and 15-22 were rejected 35 U.S.C. §102(e) as being anticipated by Barford et al.

This rejection is respectfully traversed for the following reasons.

The Barford et al reference discloses a diagnostic unit for diagnosis of a technical system having multiple components. As explicitly stated at column 4, lines 55-57, the so-called "diagnosis engine" disclosed in the Barford et al reference is for the purpose of handling *multiple* component failures. In the Barford et al procedure, no distinction is made between single and multiple faults.

Applicants acknowledge that in the procedure disclosed in the Barford et al reference, the technical system is subjected to a test to obtain a test result that relates to operation of the technical system. Applicants also acknowledge that the model disclosed at column 4, lines 36-39 of the Barford et al reference describes which function units were tested, as also set forth in claim 1 of the present application. In substantiating the Examiner's position that the Barford et al reference discloses the entirety of the "using a test model..." step in claim 1 of the present application, however, the Examiner cited a relatively long passage in the Barford et al reference, namely column 4, lines 40-54. Applicants do not find any teaching in that passage regarding a system model in which information is compiled regarding *assembly* of the functional units in the technical units. Applicants acknowledge that in order for the procedure disclosed in the Barford et al reference to be useful, some knowledge of the system architecture of the system being tested must be known, but there is no disclosure in the Barford et al reference that this knowledge is provided, or used, in the form of a "system model in which information is compiled regarding

assembly of said functional units in said technical system" as set forth in claim 1 of the present application.

Therefore, although Barford et al does describe automated processing of the test result, there is no explicit teaching in that reference that this is based on two models, namely the aforementioned test model designating the functional units that were tested in the test, and the system model regarding assembly of the functional units in the technical system. Additionally, since the test procedure disclosed in the Barford et al reference is for the purpose of ideally identifying multiple faults or failures, the method in the Barford et al reference proceeds in a different sequence from that disclosed and claimed in the present application.

Barford et al generally discloses the association of a defect probability with *combinations* of components, as described at column 55, lines 52-64. The number of components in such a group is designated N. According to the method disclosed in the Barford et al reference, the probability for each of these combinations of components or function units is undertaken in step 260, as described at column 9, lines 1-4. Initially, N = 1, which means that the number of components in the combination is only one, i.e. an individual component or function unit is being tested. In this step 260, the probabilities are calculated and the procedure is terminated as soon as any of those probabilities is calculated that is not zero, and a diagnostic output is emitted. This is described at column 11, lines 17-19. If, for N = 1, every probability is zero (i.e. no probability is not zero), N is incremented, and the probability calculation then proceeds for N = 2. The reason why Barford proceeds in this manner, with N being successively incremented is because of the aforementioned goal of the Barford et al reference to identify various of *combinations*

of components. As stated at column 1, lines 19-22, in this manner, a set of diagnoses is found with the minimum cardinality necessary to explain the test results.

Therefore, even though it is not a goal of the Barford et al reference to assign individual failure or defect probabilities to the individual components themselves, in the special case of N = 1 in the overall Barford et al procedure, it happens to be the case that the probability of each individual component being defective, or having failed, is calculated.

Nevertheless, this special case in the Barford et al reference, as explained above, is the *first step* in the overall iterative procedure disclosed in Barford et al. This is in contrast to the subject matter of claim 1 of the present application wherein the test result (obtained using the aforementioned two different models) is automatically analyzed to initially determine a group of the functional units that could be defective based on the test result, thereby producing an analysis result, and th is analysis result is then *subsequently used* to assign respective defect probabilities to each of the individual functional units in the group.

In the original language of claim 1, by requiring that the analysis result be obtained by determining a group of the functional components which could be defective if based on the test result, and then stating this analysis result is used to assign respective defect probabilities to the functional units of the group, Applicants submit the sequence of "first analyze the group, then analyze the individual components" was inherent. Nevertheless, claim 1 has been editorially amended to make this sequence explicit. This is exactly the opposite of the sequence in the Barford et al reference wherein, in the special case of N = 1, failure probabilities for

the individual components are first calculated, and then (if all of those probabilities are zero) calculation of group probabilities (N = 2, or more) takes place.

Therefore, in the Barford et al reference not only is the sequence of calculations different (because of the different goal in the Barford et al reference), but also the failure probabilities of the individual components in the special case of N = 1 is simply an initial result in the overall step 260, whereas in the subject matter of claim 1 this is the final result.

The Barford et al reference, therefore, does not disclose all of the method steps of claim 1 as arranged in that claim, and thus does not anticipate claim 1.

Claim 2 depends from claim 1, and therefore the above arguments with regard to claim 1 applied to claim 2 as well. As a separate argument as to why claim 2 is not anticipated by Barford et al, Applicants submit that the Barford et al reference does not disclose comparison of the respective defect probabilities of the functional units in the group to a defect probability limit, as set forth in claim 2. In substantiating the rejection of claim 2 based on the Barford et al reference, the Examiner cited column 5, lines 63-64. This passage states that the combination with the highest probability is selected as a diagnosis result. A selection according to the highest probability, however, is not a specification of a limit probability, above which one or more functional units can be detected as being defective. This is because the highest probability that is selected in the Barford et al reference is self-referential, and therefore it has no inherent ability to be used as a limit.

In fact, although the Barford et al reference discusses the possibility that a limit defect probability could be used (namely the "likelihood threshold" described at

column 11, lines 27-31), Barford et al teach away from the use of such a limit because, according to Barford et al, this is very difficult to implement.

Therefore, Applicants submit that claim 2 is not anticipated by Barford et al because of the failure of Barford et al to disclose a probability defect limit, and the failure of Barford et al to disclose use of such a limit for comparison purposes in order to detect that one of the function units is defective.

The remaining claims 9-12 and 15-22 rejected as being anticipated by Barford et al add further steps to the novel method of claim 1, and are therefore transmitted to be not anticipated by Barford et al for the same reasons discussed above in connection with claim 1.

Claims 3-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Barford et al in view of Mongan et al. The same arguments discussed above with regard to claim 1 with respect to the teachings of the Barford et al reference are applicable to this rejection, and Applicants submit the following additional arguments in support of the patentability of claim 3, from which claims 4-8 all depend.

Claim 3 states that if none of the respective defect probabilities assigned to the functional units in the group exceeds the aforementioned defect probability limit, a second test is designated, which more precisely refines the defect probabilities of the functional units in the group. Because the Barford et al reference fails to disclose of a defect probability, the same arguments discussed above with regard to claim 2 are applicable to claim 3. Additionally, however, even though the Barford et al reference discloses that multiple tests can be implemented, there is no disclosure of a second test to more precisely render or calculate the defect probabilities. The Examiner has acknowledged as much, and therefore relies on Mongan et al as

providing such a teaching. The Mongan et al reference, however, is concerned with the testing of computer programs on various "client computers" as described at column 1, lines 21-23 and column 2, lines 7-13 thereof. As such, there is no mention anywhere in the Mongan et al reference of defect probabilities, which is understandable since the Mongan et al reference is concerned with computer programs, rather than function units.

More importantly, however, there is no second test disclosed in the Mongan et al reference, instead, the Mongan et al reference teaches a method wherein a check is made as to whether a test should be executed again on the same or a different client computer, as described briefly at column 2, lines 17-19, and in more detail at column 5, line 10 through column 6, line 6. Neither of these passages discloses or suggests that, in the event no defect probability lies above a limit, at least one second test should be implemented to more precisely render the defect probabilities of the function units of the group using the previously-obtained defect probability. Since no defect probabilities in any sense are disclosed in the Mongan et al reference, there is nothing of this type that even could be rendered more precisely in the Mongan et al reference. More fundamentally, however, the Mongan et al reference merely teaches executing the same test multiple times, rather than a new test.

Although not specifically relied upon by the Examiner, Applicants acknowledge that the Mongan et al reference teaches a so-called "test reducer," which is described at column 9, lines 19-42. This test reducer, however, serves to check or test the extent to which a test (i.e. the instructions or contents thereof) can be reduced so that a reproducible error occurs, as stated at column 2, lines 20-23.

No test for more precisely rendering a defect probability is encompassed by this test reducer.

Claim 3, therefore, would not have been obvious to a person of ordinary skill in the field of testing a technical system under the provisions of 35 U.S.C. §103(a) based on the teachings of Barford et al and Mongan et al. Claims 4-8 add further method steps to the non-obvious combination of claim 3, and therefore would not have been obvious to such a person of ordinary skill based on the teachings of Barford et al and Mongan et al for the same reasons discussed above in connection with claim 3.

All claims of the application are therefore submitted to be in condition for allowance, and early reconsideration of the application is respectfully requested.

Submitted by,

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